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July 29, 2013

Ms. Theresa Holz
On-Scene Coordinator
United States Environmental Protection Agency, Region V
77 West Jackson Boulevard, SE-5J
Chicago, IL 60604-3507

Subject: **Becks' Lake Proposed National Priorities List (NPL) Superfund Site**
 Assessment of Play Area Surface Soils at LaSalle Park
 South Bend, St. Joseph County, Indiana
 Technical Direction Document No.: S05-0008-1305-021
 Work Order No.: 20405.012.008.2161.00
 Document Control No.: 2161-2A- BHRF

Dear Ms. Holz:

Under Technical Direction Document (TDD) No. S05-0008-1305-021, the U. S. Environmental Protection Agency Region V Emergency Response Branch tasked the Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) to conduct site assessment (SA) activities of surface soil in high-exposure playgrounds and fields at the Beck's Lake Proposed Superfund Site in South Bend, St. Joseph County, Indiana (the Site). Due to a lack of data, EPA was concerned that immediate community health concerns about the park's play areas were not able to be addressed prior to completion of a site-wide comprehensive Remedial Investigation and Feasibility Study (RI/FS) if the Proposed Beck's Lake Site NPL designation is finalized. WESTON START conducted the following support activities for the SA:

- Collected soil samples
- Conducted soil screening using an x-ray fluorescence (XRF) instrument
- Conducted data validation and review of soil sample analytical results
- Collected written and photographic documentation of Site conditions and SA activities
- Managed Site-related files and information

This letter report discusses the Site description, Site background, SA objectives and organization, SA activities, laboratory analytical results, the potential for imminent and substantial threats to the public health or welfare of the United States or the environment (potential threats to human health and the environment), and conclusions drawn based on the SA. **Attachment A** of this letter report provides the figures for this report. **Attachment B** provides photographic documentation of Site conditions and SA activities. **Attachment C** provides the site-specific Field Sampling Plan (FSP). **Attachment D** includes tables for this report. **Attachment E** provides the laboratory's full summary of analytical results. **Attachment F** includes the data validation report for the laboratory analytical data.



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SITE DESCRIPTION

The Site is located at the intersection of West Washington and North Falcon Streets in South Bend, St. Joseph County, Indiana (**Figure 1** in **Attachment A**). The Site is composed of an approximately 8-acre lake, part of the 40-acre LaSalle Park. LaSalle Park contains a baseball diamond, soccer fields, recreational picnic areas, a parking lot and community center, playground areas with permanent equipment, and a large area that serves as additional green space.

The Site is bordered to the south and west by residential properties, to the north by wooded area and a quarry, and to the east by a light industrial property. The Site's meridian coordinates are 41°40' 34.72" North latitude and 86°17' 27.37" West longitude.

SITE BACKGROUND

In October 2001, the Indiana Department of Environmental Management (IDEM) conducted a Brownfields Environmental Assessment at the Site. The assessment included the collection of six on-site surface soil samples in LaSalle Park, four off-site surface soil samples, three sediment samples from Beck's Lake, three surface water samples from Beck's Lake, and one off-site background surface soil sample. Arsenic was detected in several soil and sediment samples at concentrations ranging from 4.8 to 20.9 milligrams per kilogram (mg/kg). These concentrations exceed the IDEM Risk Integrated System of Closure Residential Default Closure Level for arsenic of 3.9 mg/kg. The 20.9 mg/kg arsenic result was from a single sample collected at a playground in LaSalle Park.

In June 2003, IDEM conducted a Site Reassessment of the Site. During the reassessment, 22 surface soil samples were collected in various locations outside of the park boundaries. Arsenic, lead, and chromium were detected in the samples at concentrations exceeding the site-specific background sample concentrations by three times.

In 2009, IDEM collected six subsurface samples in LaSalle Park and 34 additional soil samples in residential yards south and west of LaSalle Park. The sample analytical results confirmed the elevated metals concentrations from the previous investigations and provided the principal data set for the NPL Proposal. No surface soil samples were collected from LaSalle Park in either 2003 or 2009.

Based on IDEM's findings, the Site was considered a threat to the surrounding community. After inquiry from the City of South Bend, and due to a lack of data, EPA was concerned that it was unable to answer immediate community health concerns about the park's play areas. EPA opened an SA TDD and tasked WESTON START to assist with the SA.



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SITE ASSESSMENT OBJECTIVES AND ORGANIZATION

The two main objectives of the SA were to (1) determine the presence and extent of contamination at the Site and (2) determine the potential for imminent and substantial threats to the public health or welfare of the United States or the environment.

The table below summarizes the SA organization.

Agency or Party Involved	Contact	Role
U.S. EPA – Region V Division of Superfund Emergency Response Branch 77 West Jackson Boulevard Chicago, IL 60604	Theresa Holz (312) 886-6845	Federal OSC responsible for SA oversight and success
	Owen Thompson (312) 886-4843	Remedial Project Manager responsible for overall project oversight and success
Weston Solutions, Inc. 750 Bunker Court Vernon Hills, IL 60061	Krista Richardson (847) 918-4066	START project manager responsible for SA support, direction of daily START activities, quality control, documentation, and START-related cost-tracking
Weston Solutions, Inc. 20 North Wacker Drive Suite 1210 Chicago, IL 60606	Jeff Bryniarski (312) 424-3307	START site lead responsible for SA field activities, sample management, and documentation

Note:

OSC = On-Scene Coordinator

SITE ASSESSMENT ACTIVITIES

WESTON START performed the SA activities with the assistance of EPA personnel in order to achieve the SA objectives. **Attachment B** provides photographic documentation of Site conditions and SA activities.

On June 11, 2013, EPA and WESTON START personnel mobilized to the Site to conduct the SA. During the SA, composite and grab surface soil samples were collected from 0 to 3 inches below ground surface (bgs) and field screened using an XRF instrument before final packaging of the samples for off-site laboratory analysis. XRF screening procedures were conducted as outlined in the approved FSP (**Attachment C**). Areas sampled included the following target areas of concern (AOC) in LaSalle Park: four soccer fields, one baseball diamond; four playgrounds; and accessible areas surrounding Beck's Lake. **Figure 2 in Attachment A** shows the sampling locations. The samples were collected to identify surface soil with high concentrations of metals (specifically arsenic, lead, and chromium).

Before the sampling was conducted, grids were laid out on the soccer fields and baseball diamond. All sampling location data were collected using a global positioning unit (GPS) unit. Sampling activities at each AOC are discussed below.



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Soccer Field Sampling

Soccer Fields A through D were sampled. Each soccer field was divided into eight grids, and one five-point composite sample was collected from each grid square for analysis of Target Analyte List (TAL) metals. In addition, one five-point composite sample was collected from each soccer field for analysis of hexavalent chromium (Cr VI). **Figures 3 and 4 in Attachment A** show the soccer field sampling locations. All composite samples were collected from bare spots with limited turf.

Baseball Diamond Sampling

The baseball diamond area was divided into three grids based on a pie shape, and one five-point composite sample was collected from each grid square for analysis of TAL metals. In addition, one five-point composite sample was collected from across the baseball diamond for analysis of Cr VI. **Figure 5 in Attachment A** shows the baseball diamond sampling locations. All composite samples were collected from the dirt infield, which contained no grass or turf.

Playground Sampling

Four playgrounds were sampled. Sampling locations were selected under and around various pieces of permanent playground equipment. **Figures 3 and 5 in Attachment A** show the playground sampling locations. At the Southwest Playground, 10 discrete grab samples were collected for analysis of TAL metals and one five-point composite sample was collected for analysis of Cr VI. At the Parking Lot Playground, five discrete grab samples were collected for analysis of TAL metals and one five-point composite sample was collected for analysis of Cr VI. At the Southeast Playground, three discrete grab samples were collected for analysis of TAL metals and one three-point composite sample was collected for analysis of Cr VI. At the Northwest Playground, three discrete grab samples were collected for analysis of TAL metals and one three-point composite sample was collected for analysis of Cr VI. Any large wood chips were removed from the samples.

Beck's Lake Shore Sampling

Two samples were collected along the shoreline of Beck's Lake from an area where public access to the lake was possible through a break in the vegetation. **Figure 6 in Attachment A** shows the Beck's Lake sampling locations. One sample was analyzed for TAL metals and the other for Cr VI. The samples were collected from bare spots with limited brush.

XRF Soil Screening

In the field, the samples were homogenized, placed in Ziploc bags, and labeled. The Innov-X XRF instrument used for field screening was standardized in accordance with equipment guidelines, and the samples were screened three times using a 30-second screening interval. The field screening values were used by EPA to determine if additional sampling should be considered. WESTON START then transferred the soil samples into the proper laboratory



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containers, labeled the containers, and placed all samples in a cooler on ice. Samples were shipped for analysis to Accutest Laboratories of New England in Marlborough, MA.

Table 1 in **Attachment D** summarizes the XRF screening results. The Innov-X reads the calculated chemical concentration and the error on the measurement. The error on the measurement is denoted in **Table 1** as a “+/-“ value that represents the sigma error on the counting statistics of the measurement. The XRF results were compared to the EPA’s residential Removal Management Level (RML) based on a hazard quotient (HQ) of 3. Two of the triplicate arsenic results for sample BL-SO81 collected at the Southwest Playground exceeded the RML of 39 mg/kg at concentrations of 40 +/- 6 mg/kg and 46 +/- 6 mg/kg. One of the triplicate arsenic results for sample BL-SO82 collected at the Southwest Playground exceeded the RML of 39 mg/kg at a concentration of 40 +/- 5 mg/kg. The corresponding laboratory analytical results for the samples are discussed below.

LABORATORY ANALYTICAL RESULTS

All surface soil samples were submitted to the laboratory within the acceptable holding times as defined in the site-specific FSP (**Attachment C**). The laboratory electronically submitted analytical results to a WESTON START chemist for review and validation, and preliminary results were forwarded to the OSC on July 1, 2013. A data validation report was prepared for the analytical results received from the laboratory, and all of laboratory results were deemed suitable for use. **Attachment E** provides the full laboratory summary of the analytical results, and **Attachment F** provides the data validation report.

Table 2 in **Attachment D** summarizes the analytical results for TAL metals and Cr VI. EPA SW-846 Method 6010B was used to analyze 61 samples, including 4 duplicates. The following metals are included in the TAL metals analytical method: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium (total), cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc. EPA SW-846 Method 3060A/7196 was used to analyze 11 samples, including 1 duplicate. Redox potential and pH analyses are included with the Cr VI analytical method.

The validated analytical results were compared to the EPA’s residential RMLs based on a HQ of 3. The soil sampling analytical results are summarized below.

- **TAL Metals:** No TAL metals were detected at concentrations exceeding the residential RMLs. As previously discussed, XRF screening results at sampling locations BL-SO81 and BL-SO82 exceeded the EPA RML of 39 mg/kg. However, corresponding laboratory analytical results indicated arsenic concentrations of 29.6 mg/kg and 13.8 mg/kg for the investigative and duplicate samples collected at location BL-SO81. Sample BL-SO82 was a composite of soil collected at locations BL-SO76 through BL-SO80 for Cr VI analysis. Laboratory analytical results did not indicate arsenic concentrations exceeding the RML for samples BL-SO76 through BL-SO80.



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- Cr VI: Cr VI was not detected at concentrations exceeding the residential RML for Cr VI of 29 mg/kg.

POTENTIAL THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Factors to be considered in determining the appropriateness of a potential removal action at a site are delineated in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at Title 40 of the *Code of Federal Regulations* (CFR) 300.415(b)(2). Based on the detected levels of contamination and the size of the affected area, the Site does not appear to pose imminent and substantial threats to the public health or welfare of the United States or the environment. A summary of the NCP factors applicable to this Site is provided below.

- **High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate**

Analytical results for surface soil samples collected during the SA indicate that TAL metals levels do not exceed the residential RMLs. In addition, all Cr VI analytical results are below the residential RML. The bare spots at the Site apparently do not contain any source material. Therefore, the threat of off-site migration likely is very low.

CONCLUSIONS

Based on the factors discussed above, the Site does not pose imminent and substantial threats to the public health or welfare of the United States or the environment. This conclusion is based on the SA sample analytical results.

This letter report serves as the final deliverable for this TDD. If you have questions or comments regarding this report, please contact us.

WESTON SOLUTIONS, INC.

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START Site Lead
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Krista Richardson
START Project Manager
Telephone No.: (847) 918-4066



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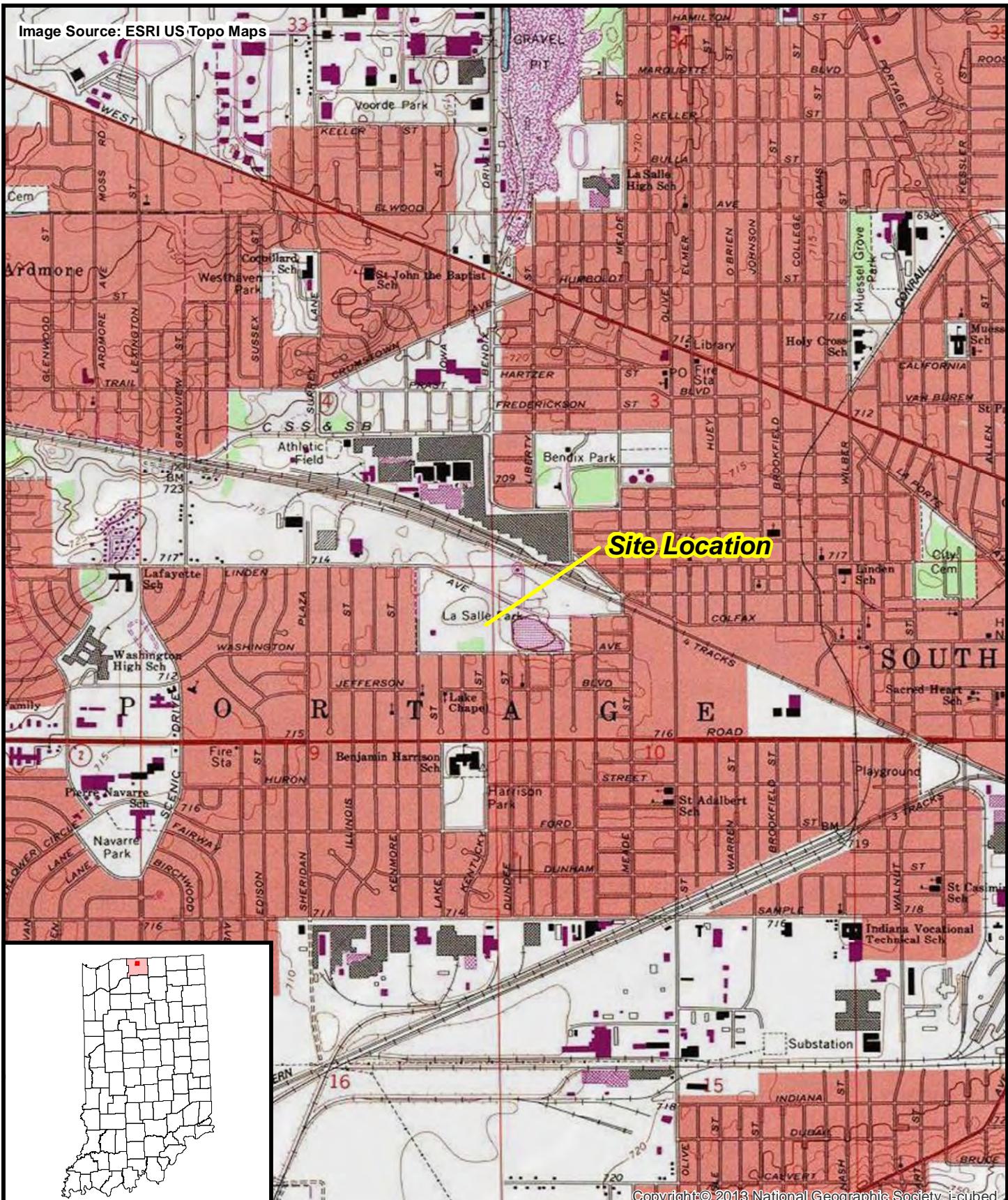
Attachments:

- A – Figures
- B – Photographic Documentation
- C – Field Sampling Plan
- D – Tables
- E – Laboratory Analytical Results
- F – Data Validation Report

cc: WESTON START DCN File

ATTACHMENT A

FIGURES



File: D:\Chilton\mxd\F1_SiteLocation.mxd, 17-Mar-11 09:56, mejacm

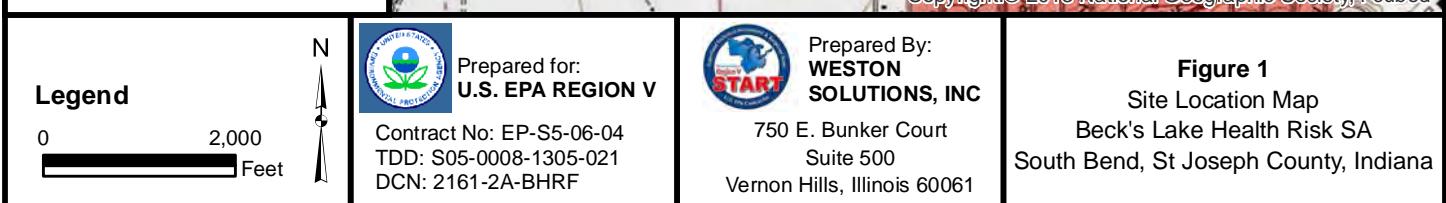
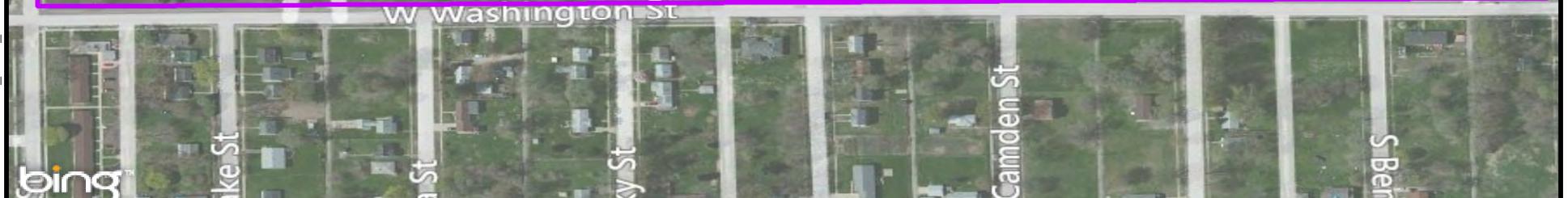
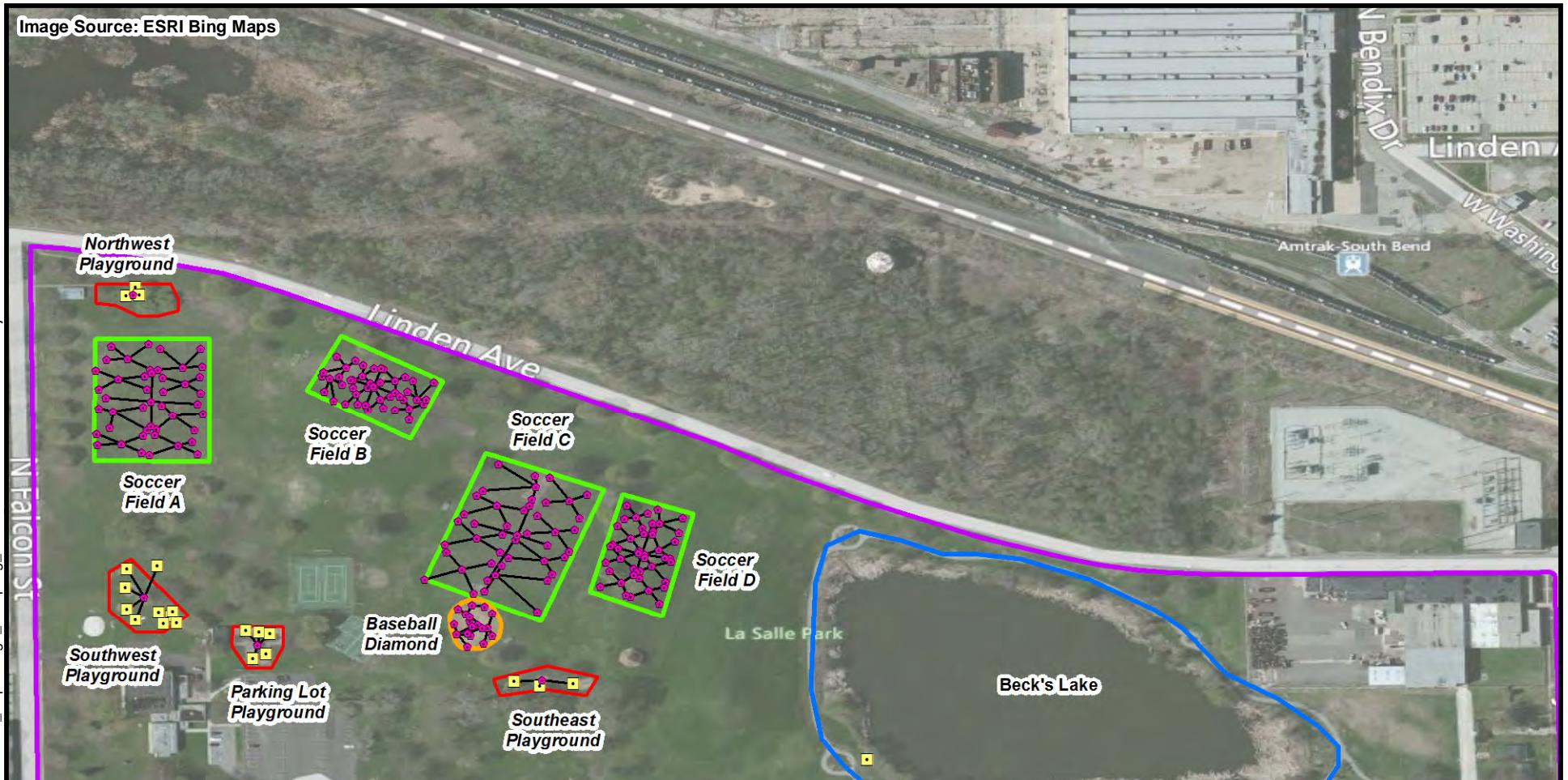


Image Source: ESRI Bing Maps

FILE:D:\Becks_Lake_HRTA\mxd\Letter_Report\Fig2_Sampling_Loc.mxd 9:23:05 AM 7/8/2013 mejacm



Legend

- Discrete Sample ■ Playground
- Composite Sample ■ Soccer Field
- Baseball Diamond ■ Site Boundary
- Lake AOC

N

0 350 Feet



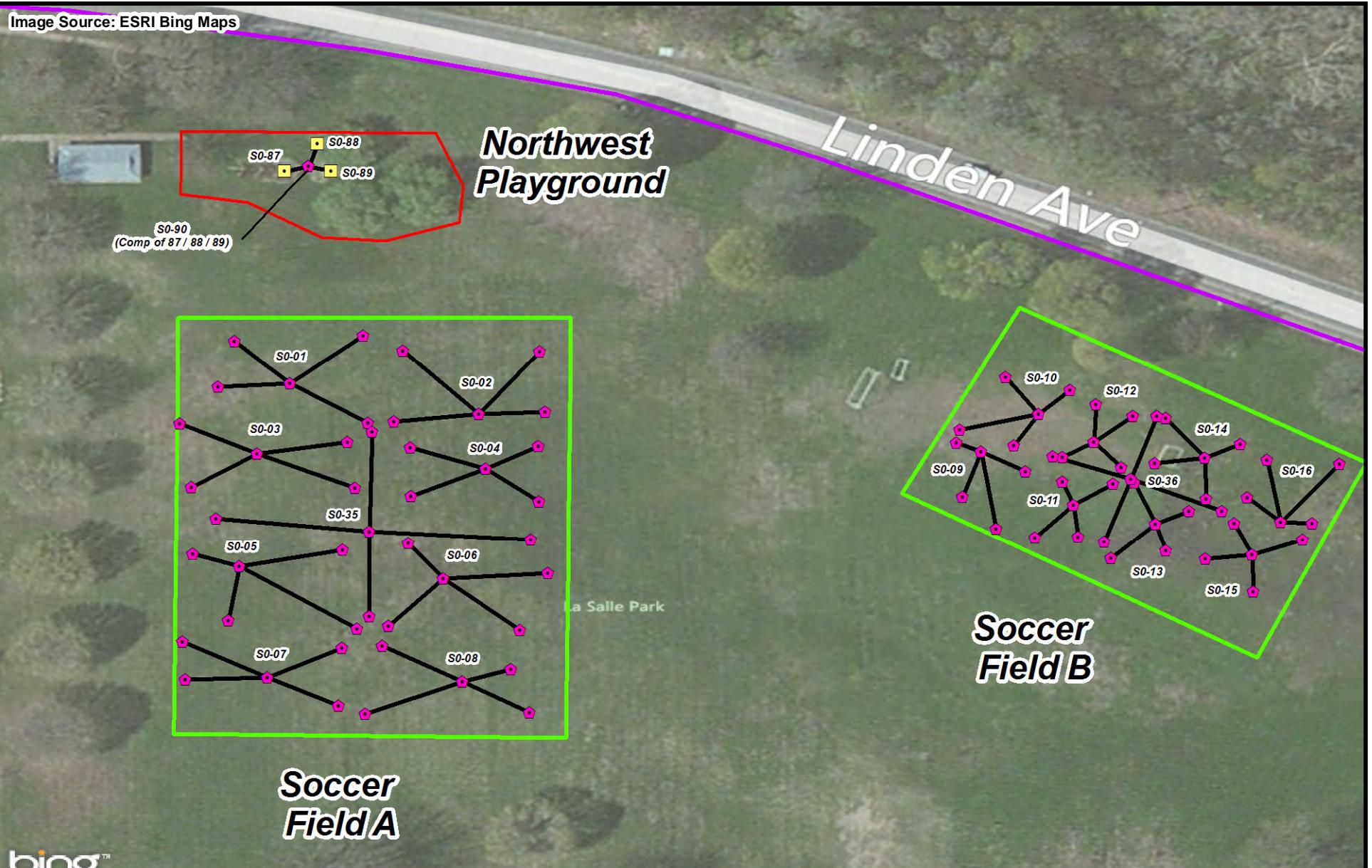
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Contract No: EP-S5-06-04
TDD: S05-0008-1305-021
DCN: 2161-2A-BHFR

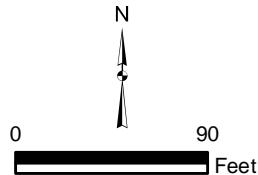


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Figure 2
Sampling Location Map
Beck's Lake Health Risk SA
South Bend, St Joseph County, Indiana



- Legend**
- [Yellow square] Discrete Sample
 - [Pink diamond] Composite Sample
 - [Green line] Soccer Field
 - [Purple line] Site Boundary



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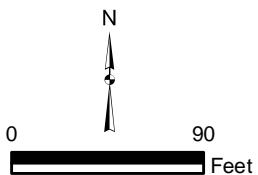
Prepared By:
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Figure 3
Sampling Location Map -
Soccer Field A/B and Northwest Playground
Beck's Lake Health Risk SA
South Bend, St Joseph County, Indiana



Legend

- Discrete Sample
- ♦ Composite Sample
- Soccer Field
- Site Boundary



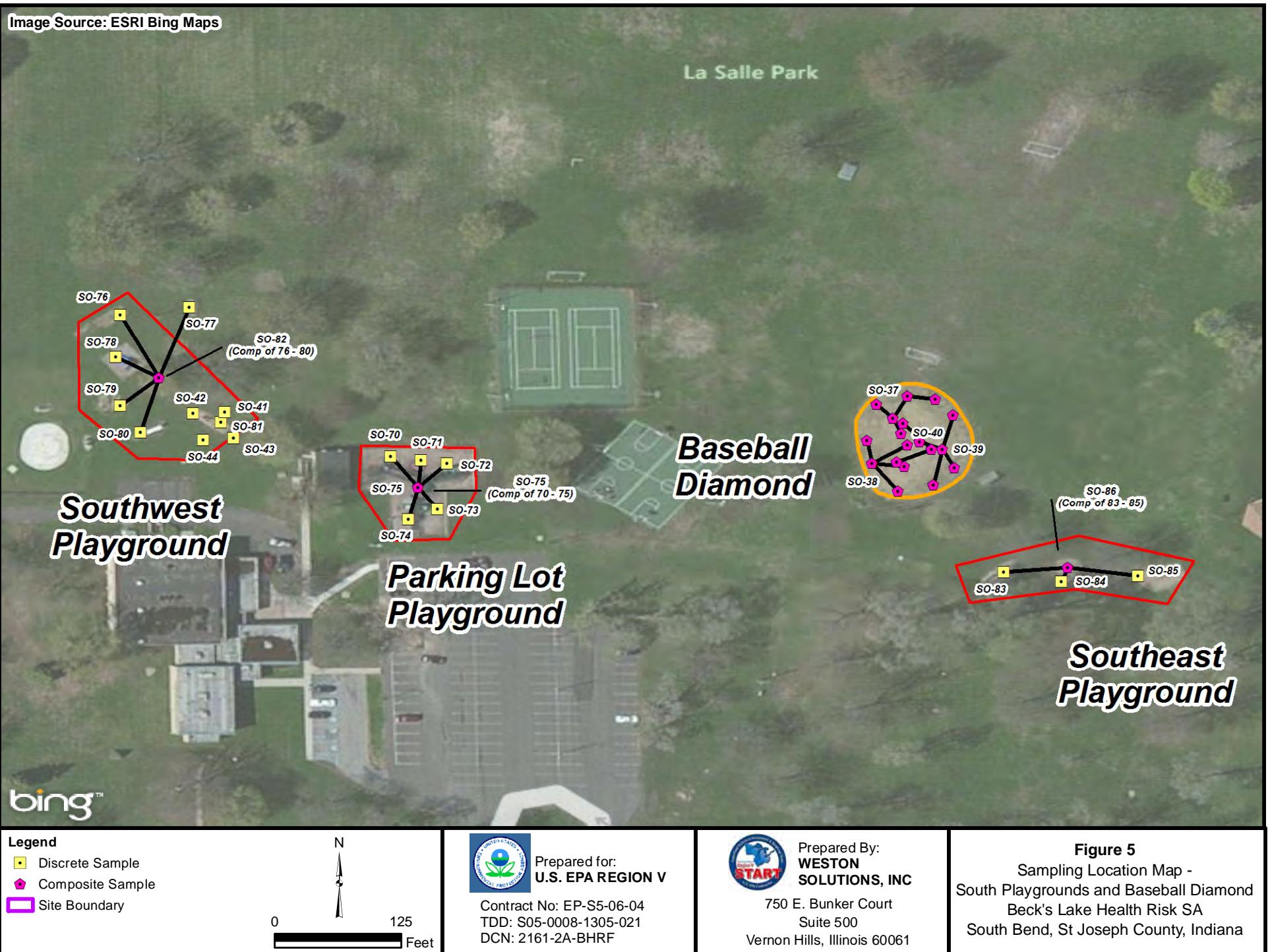
Prepared for:
U.S. EPA REGION V

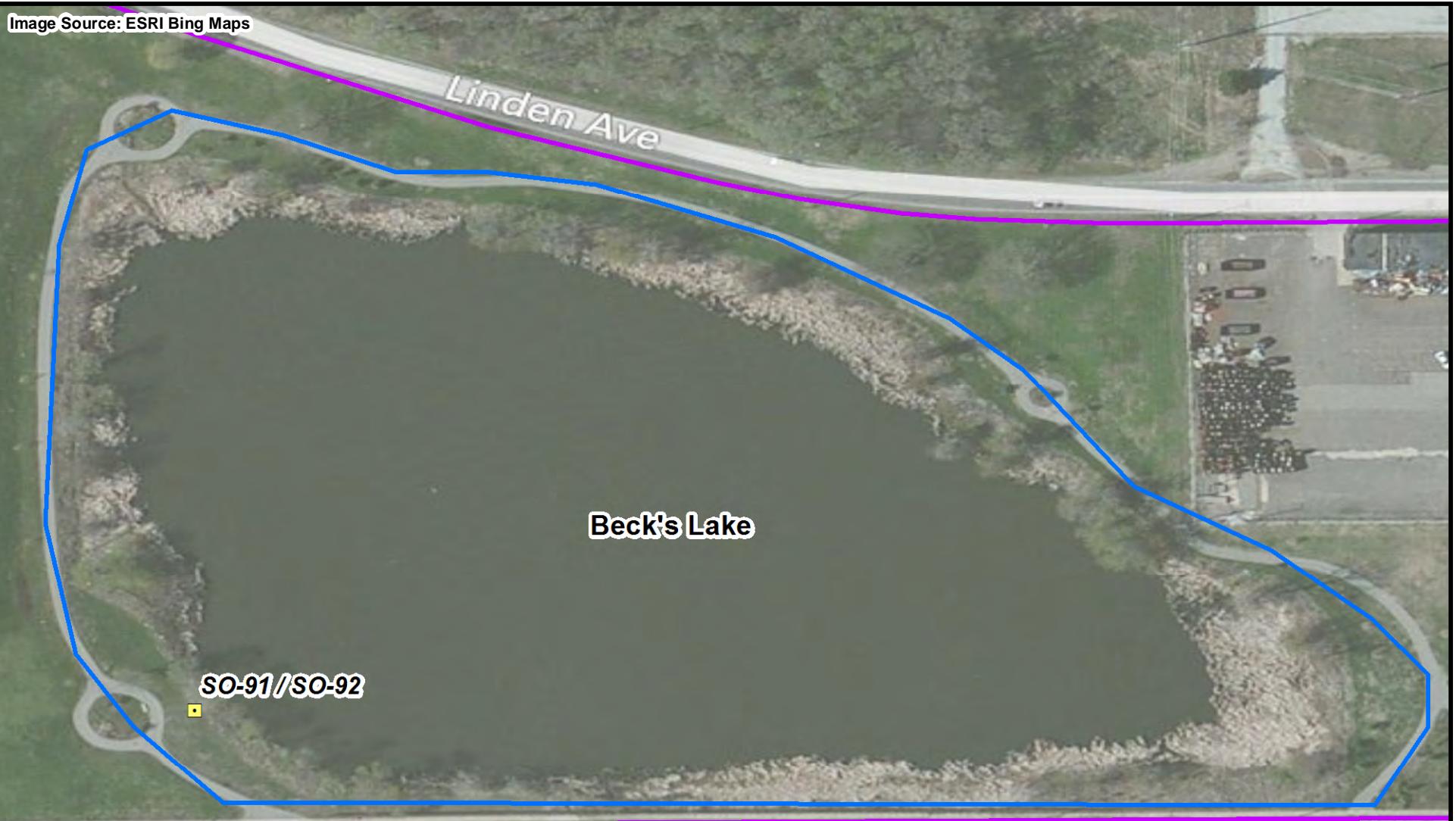
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DCN:



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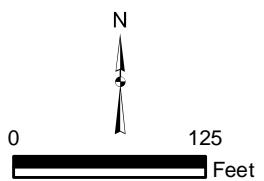
Figure 4
Sampling Location Map -
Soccer Field C and D
Beck's Lake Health Risk SA
South Bend, St Joseph County, Indiana





Legend

- [Yellow square] Discrete Sample
- [Purple diamond] Composite Sample
- [Purple line] Site Boundary



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Figure 6
Sampling Location Map -
Beck's Lake Area
Beck's Lake Health Risk SA
South Bend, St Joseph County, Indiana

ATTACHMENT B
PHOTOGRAPHIC DOCUMENTATION



Site: Beck's Lake Health Risk SA

Photograph No.: 1

Date: 6/11/13

Direction: North

Photographer: Jeff Bryniarski

Subject: Public access to lake shore (sampling location SO-91/SO-92)



Site: Beck's Lake Health Risk SA

Photograph No.: 2

Date: 6/11/13

Direction: Northwest

Photographer: Jeff Bryniarski

Subject: Soccer Field A with pin flags marking sampling grid



Site: Beck's Lake Health Risk SA

Photograph No.: 3

Direction: South

Subject: Parking Lot Playground (sampling location SO-72)

Date: 6/11/13

Photographer: Jeff Bryniarski



Site: Beck's Lake Health Risk SA

Photograph No.: 4

Direction: Northeast

Subject: Southwest Playground (sampling location SO-81)

Date: 6/11/13

Photographer: Jeff Bryniarski



Site: Beck's Lake Health Risk SA

Photograph No.: 5

Date: 6/11/13

Direction: East

Photographer: Jeff Bryniarski

Subject: START collecting soil sample from Northwest Playground (sampling location SO-89)



Site: Beck's Lake Site Assessment Letter Report

Photograph No.: 6

Date: 6/11/13

Direction: South

Photographer: Jeff Bryniarski

Subject: Baseball Diamond area with pin flags marking sampling grid

ATTACHMENT D

TABLES

Table 1
Soil Sampling X-Ray Fluorescence Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name:		Arsenic	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc
Residential RML, HQ=3:		3.9E+01	3.5E+05	9.4E+03	1.6E+05	4.0E+02	5.5E+03	3.0E+01	4.6E+03	1.2E+03	7.0E+04
Units:		(mg/kg)									
Location	Location ID										
Northwest Playground	BL-SO90	<LOD +/- 15	<LOD +/- 107	32 +/- 10	19265 +/- 328	54 +/- 6	396 +/- 47	<LOD +/- 13	<LOD +/- 43	<LOD +/- 4	132 +/- 10
		23 +/- 6	<LOD +/- 113	56 +/- 11	15927 +/- 282	54 +/- 6	266 +/- 42	<LOD +/- 12	<LOD +/- 41	<LOD +/- 5	123 +/- 9
		17 +/- 5	<LOD +/- 100	31 +/- 10	16773 +/- 285	52 +/- 5	316 +/- 42	<LOD +/- 12	<LOD +/- 41	<LOD +/- 4	124 +/- 9

Notes:

Shaded values indicate concentration exceeds EPA RML.

<LOD = Less than the level of detection

HQ = Hazard Quotient

mg/kg = milligram per kilogram

RML = Removal Management Level

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name (HQ=3)	Residential RML	Location	Soccer Field A									
			BL-SO01	BL-SO02	BL-SO03	BL-SO04	BL-SO05	BL-SO06	BL-SO07	BL-SO08	BL-SO35	
		Field Sample ID	BLSO01(0-3)-061113	BLSO02(0-3)-061113	BLSO03(0-3)-061113	BLSO04(0-3)-061113	BLSO05(0-3)-061113	BLSO06(0-3)-061113	BLSO07(0-3)-061113	BLSO08(0-3)-061113	BLSO35(0-3)-061213	
		Sample Date	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/12/2013	
pH	NA	S.U.	--	--	--	--	--	--	--	--	7.5	
Redox Potential	NA	mV	--	--	--	--	--	--	--	--	505	
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	--	--	--	--	--	1.5 J	
Aluminum	2.3E+05	mg/kg	3450	3840	2690	4280	6180	3760	5720	4820	--	
Antimony	9.4E+01	mg/kg	1.7 J	0.84 UJ	0.79 UJ	0.78 UJ	0.85 UJ	0.68 UJ	0.82 UJ	0.76 UJ	--	
Arsenic	3.9E+01	mg/kg	8.1	9.8	9.6	14.9	11.9	13	6	8.2	--	
Barium	4.6E+04	mg/kg	107	71.8	65.3	90.6	129	118	80.2	74.6	--	
Beryllium	4.7E+02	mg/kg	0.36	0.34 U	0.32 U	0.32	0.46	0.3	0.37	0.31 U	--	
Cadmium	2.1E+02	mg/kg	1.5	0.84	0.67	1.1	0.99	1.5	0.5	0.67	--	
Calcium	NA	mg/kg	22000	25900	38000	31200	20800	70300	13000	10900	--	
Chromium	3.5E+05	mg/kg	23.7	8.6	7.2	12.7	13.1	15.7	11.4	10.7	--	
Cobalt	7.0E+01	mg/kg	4.2 U	4.2 U	4 U	3.9 U	4.7	4.1	4.1 U	3.8 U	--	
Copper	9.4E+03	mg/kg	76.5	26.5	22.7	28.5	33.3	47.2	22.2	23	--	
Iron	1.6E+05	mg/kg	12900	10400	8420	12400	12700	11900	11100	8320	--	
Lead	4.0E+02	mg/kg	163	56.5	58.5	77.6	85.7	123	45.2	74.7	--	
Magnesium	NA	mg/kg	6320	4730	6160	2810	4300	3370	2430	3460	--	
Manganese	5.5E+03	mg/kg	246	223	223	206	426	379	326	320	--	
Mercury	3.0E+01	mg/kg	0.33	0.1	0.074	0.13	0.12	0.14	0.059	0.14	--	
Nickel	4.6E+03	mg/kg	14.7	8.7	7	9.6	10.3	10.2	9	8.7	--	
Potassium	NA	mg/kg	530	630	480	609	751	511	680	702	--	
Selenium	1.2E+03	mg/kg	0.83 U	0.85	0.79 U	1.2	0.85 U	0.74	0.82 U	0.76 U	--	
Silver	1.2E+03	mg/kg	0.59	0.42 U	0.4 U	0.39 U	0.42 U	0.34 U	0.41 U	0.38 U	--	
Sodium	NA	mg/kg	420 U	420 U	400 U	390 U	420 U	340 U	410 U	380 U	--	
Thallium	2.3E+00	mg/kg	0.83 U	0.84 U	0.79 U	0.78 U	0.85 U	0.68 U	0.82 U	0.76 U	--	
Vanadium	1.2E+03	mg/kg	10.8	10.7	8.7	12	16.2	10.3	15.3	12.6	--	
Zinc	7.0E+04	mg/kg	214 J	68.6 J	71.8 J	83.4 J	112 J	110 J	66.6 J	74.6 J	--	

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name (HQ=3)	Residential RML	Location	Soccer Field B								
			BL-SO09	BL-SO10	BL-SO11	BL-SO12	BL-SO13	BL-SO14	BL-SO15	BL-SO16	
		Field Sample	BL-SO09(0-3) ID 061113	BL-SO10(0-3) ID 061113	BL-SO11(0-3) ID 061113	BL-SO12(0-3) ID 061113	BL-SO13(0-3) ID 061113	BL-SO14(0-3) ID 061113	BL-SO15(0-3) ID 061113	BL-SO16(0-3) ID 061113	BL-SO36(0-3) ID 061213
		Sample Date	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/12/2013
pH	NA	S.U.	--	--	--	--	--	--	--	--	7
Redox Potential	NA	mV	--	--	--	--	--	--	--	--	491
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	--	--	--	--	--	1.6 J
Aluminum	2.3E+05	mg/kg	6370	11800	6590	7710	9290	9580	9730	8290	--
Antimony	9.4E+01	mg/kg	0.99 UJ	1 UJ	0.99 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	--
Arsenic	3.9E+01	mg/kg	6	8.5	5.5	8.2	8.6	9.6	7	7.5	--
Barium	4.6E+04	mg/kg	35.1	109	39.1	63.8	146	146	202	182	--
Beryllium	4.7E+02	mg/kg	0.4 U	0.54	0.4 U	0.4	0.5	0.59	0.5	0.45	--
Cadmium	2.1E+02	mg/kg	0.41	0.71	0.4	0.67	0.91	2.5	2.1	1.5	--
Calcium	NA	mg/kg	15900 J	10900 J	16400 J	20500 J	14500 J	20800 J	21700 J	38300 J	--
Chromium	3.5E+05	mg/kg	12.5	15.9	11.9	13.3	16.8	19.6	20.3	17.1	--
Cobalt	7.0E+01	mg/kg	5.2	6	5.1	5.7	6.4	6.4	6.2	5.5	--
Copper	9.4E+03	mg/kg	17.1	24.2	18.2	21.2	34.7	46.4	44.8	43.4	--
Iron	1.6E+05	mg/kg	10900 J	14200 J	10900 J	12200 J	14300 J	15400 J	14500 J	13600 J	--
Lead	4.0E+02	mg/kg	26.2	54	32	41.6	72.6	104	161	116	--
Magnesium	NA	mg/kg	9950	5030	10600	9950	3650	3490	2270	2260	--
Manganese	5.5E+03	mg/kg	366	605	352	454	808	761	898	875	--
Mercury	3.0E+01	mg/kg	0.055	0.1	0.072	0.1	0.12	0.13	0.14	0.22	--
Nickel	4.6E+03	mg/kg	12.6	14.7	12.5	13.8	15.7	17.2	17.4	25.8	--
Potassium	NA	mg/kg	1280 J	1220 J	1280 J	1220 J	1260 J	1170 J	1280 J	1120 J	--
Selenium	1.2E+03	mg/kg	0.99 U	1 U	0.99 U	1 U	1 U	1 U	1 U	1 U	--
Silver	1.2E+03	mg/kg	0.5 U	0.51 U	--						
Sodium	NA	mg/kg	500 U	510 U	--						
Thallium	2.3E+00	mg/kg	0.99 U	1 U	0.99 U	1 U	1 U	1 U	1 U	1 U	--
Vanadium	1.2E+03	mg/kg	16	23.1	15.2	16.3	19.1	20.6	20.2	17.4	--
Zinc	7.0E+04	mg/kg	54.9 J	93.1 J	68.6 J	71.8 J	115 J	133 J	181 J	145 J	--

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name	Residential RML (HQ=3)	Location	Soccer Field C									
			BL-SO17	BL-SO17	BL-SO18	BL-SO19	BL-SO20	BL-SO21	BL-SO22	BL-SO23	BL-SO24	BL-SO25
		Field Sample ID	BL-SO17(0-3) 061213	BL-SO17(0-3) 061213D	BL-SO18(0-3) 061213	BL-SO19(0-3) 061213	BL-SO20(0-3) 061213	BL-SO21(0-3) 061213	BL-SO22(0-3) 061213	BL-SO23(0-3) 061213	BL-SO24(0-3) 061213	BL-SO25(0-3) 061213
		Sample Date	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013
pH	NA	S.U.	--	--	--	--	--	--	--	--	--	6.4
Redox Potential	NA	mV	--	--	--	--	--	--	--	--	--	499
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	--	--	--	--	--	--	0.44 UJ
Aluminum	2.3E+05	mg/kg	6020	5460	6280	6330	6780	8100	6420	6940	5910	--
Antimony	9.4E+01	mg/kg	0.99 UJ	1 UJ	0.99 UJ	0.99 UJ	1 UJ	1 UJ	0.99 UJ	0.99 UJ	1 UJ	--
Arsenic	3.9E+01	mg/kg	4.1	3.8	4.3	5.6	5.1	5.3	4.5	3.8	4.3	--
Barium	4.6E+04	mg/kg	73.9	69.7	89.8	93	117	142	99.1	87.5	80.1	--
Beryllium	4.7E+02	mg/kg	0.39 U	0.4 U	0.39 U	0.39 U	0.44	0.43	0.4 U	0.4 U	0.41 U	--
Cadmium	2.1E+02	mg/kg	0.41	0.42	0.42	0.78	0.98	1	0.73	0.63	0.42	--
Calcium	NA	mg/kg	2000 J	1910 J	2540 J	2260 J	3020 J	2960 J	3590 J	2630 J	3080 J	--
Chromium	3.5E+05	mg/kg	13.9	13.1	12.4	24.6	20.5	18.3	16.7	21.9	11.1	--
Cobalt	7.0E+01	mg/kg	4.9 U	5 U	4.9 U	5.1	5.6	5.8	5 U	5.1	5.1 U	--
Copper	9.4E+03	mg/kg	23.6	23.2	24.4	57.4	62.2	38.4	41.8	34.9	18.1	--
Iron	1.6E+05	mg/kg	9890	10600	11300	13800	12900	14100	11000	11700	10700	--
Lead	4.0E+02	mg/kg	54.6 J	56.2 J	46.5 J	77.2 J	92.2 J	107 J	76 J	117 J	61.7 J	--
Magnesium	NA	mg/kg	1240	1140	1330	1300	1470	1710	1630	2390	1650	--
Manganese	5.5E+03	mg/kg	325	303	380	367	414	416	336	269	309	--
Mercury	3.0E+01	mg/kg	0.064	0.047	0.061	0.082	0.091	0.091	0.12	0.22	0.06	--
Nickel	4.6E+03	mg/kg	11.2	11.1	10.9	27.3	21	14.4	15.2	15.2	9.1	--
Potassium	NA	mg/kg	792 J	732 J	861 J	803 J	938 J	989 J	842 J	911 J	840 J	--
Selenium	1.2E+03	mg/kg	0.99 U	1 U	0.99 U	0.99 U	1 U	1 U	0.99 U	0.99 U	1 U	--
Silver	1.2E+03	mg/kg	0.49 U	0.5 U	0.49 U	0.49 U	0.5 U	0.5 U	0.5 U	0.5 U	0.51 U	--
Sodium	NA	mg/kg	490 U	500 U	490 U	490 U	500 U	500 U	500 U	500 U	510 U	--
Thallium	2.3E+00	mg/kg	0.99 U	1 U	0.99 U	0.99 U	1 U	1 U	0.99 U	0.99 U	1 U	--
Vanadium	1.2E+03	mg/kg	15.9	14.9	17.1	17.2	19.7	20.1	17.3	17.7	16.3	--
Zinc	7.0E+04	mg/kg	67 J	66.8 J	77.1 J	135 J	141 J	217 J	118 J	143 J	88.3 J	--

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name	Residential RML (HQ=3)	Location	Soccer Field D									
			BL-SO26	BL-SO26	BL-SO27	BL-SO28	BL-SO29	BL-SO30	BL-SO31	BL-SO32	BL-SO33	BL-SO34
		Field Sample ID	BL-SO26(0-3) 061213	BL-SO26(0-3) 061213D	BL-SO27(0-3) 061213	BL-SO28(0-3) 061213	BL-SO29(0-3) 061213	BL-SO30(0-3) 061213	BL-SO31(0-3) 061213	BL-SO32(0-3) 061213	BL-SO33(0-3) 061213	BL-SO34(0-3) 061213
		Sample Date	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013
pH	NA	S.U.	--	--	--	--	--	--	--	--	--	7.2
Redox Potential	NA	mV	--	--	--	--	--	--	--	--	--	464
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	--	--	--	--	--	--	0.47 J
Aluminum	2.3E+05	mg/kg	4050	4040	6030	5050	7100	5960	7620	4780	6290	--
Antimony	9.4E+01	mg/kg	1.2 J	1 UJ	1 UJ	1.2 J	0.98 UJ	1 UJ	0.99 UJ	1 UJ	1 UJ	--
Arsenic	3.9E+01	mg/kg	7.7	7.5	5.7	7.1	5.9	6.4	6.3	8.5	6.3	--
Barium	4.6E+04	mg/kg	72.9	71.2	74.5	64.6	86.9	82.1	96.2	77.7	79.5	--
Beryllium	4.7E+02	mg/kg	0.4 U	0.4 U	0.4 U	0.4 U	0.39 U	0.4 U	0.39	0.41 U	0.4 U	--
Cadmium	2.1E+02	mg/kg	1.1	1.1	0.49	0.7	0.44	0.63	0.42	0.59	0.4 U	--
Calcium	NA	mg/kg	5040 J	4800 J	6300 J	5640 J	4170 J	6320 J	5570 J	19400 J	10300 J	--
Chromium	3.5E+05	mg/kg	15.3	14.7	11.1	14.3	12.2	12.8	12.2	10.9	10.4	--
Cobalt	7.0E+01	mg/kg	5 U	5 U	5 U	5 U	5	5 U	5.2	5.1 U	5 U	--
Copper	9.4E+03	mg/kg	30.3	29.6	16	23.2	14.8	22.2	14.3	19.1	12.7	--
Iron	1.6E+05	mg/kg	12500	12300	10400	10800	10200	10500	10600	11700	9770	--
Lead	4.0E+02	mg/kg	151 J	144 J	46.6 J	78.2 J	31.4 J	56.6 J	24.2 J	45.8 J	25.3 J	--
Magnesium	NA	mg/kg	1360	1310	1640	1770	1820	1780	1920	2290	1940	--
Manganese	5.5E+03	mg/kg	199	193	388	280	487	354	552	382	428	--
Mercury	3.0E+01	mg/kg	0.096	0.12	0.089	0.084	0.057	0.11	0.061	0.065	0.044	--
Nickel	4.6E+03	mg/kg	8.6	8.2	8.5	8.8	9.7	9.4	10.3	7.7	8.9	--
Potassium	NA	mg/kg	754 J	744 J	1000 J	885 J	1230 J	960 J	1080 J	823 J	962 J	--
Selenium	1.2E+03	mg/kg	1 U	1 U	1 U	0.99 U	0.98 U	1 U	0.99 U	1 U	1 U	--
Silver	1.2E+03	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.49 U	0.5 U	0.49 U	0.51 U	0.5 U	--
Sodium	NA	mg/kg	500 U	500 U	500 U	500 U	490 U	500 U	490 U	510 U	500 U	--
Thallium	2.3E+00	mg/kg	1 U	1 U	1 U	0.99 U	0.98 U	1 U	0.99 U	1 U	1 U	--
Vanadium	1.2E+03	mg/kg	13	13.4	15.6	14.6	18.2	16	19.2	12.6	16.4	--
Zinc	7.0E+04	mg/kg	144 J	144 J	65.8 J	93.8 J	63 J	85.3 J	58.4 J	66.5 J	52.8 J	--

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name	Residential RML (HQ=3)	Location	Baseball Diamond					Southwest Playground		
			BL-SO37	BL-SO38	BL-SO39	BL-SO40	BL-SO40	BL-SO41	BL-SO42	BL-SO43
		Field Sample ID	BL-SO37(0-3) 061213	BL-SO38(0-3) 061213	BL-SO39(0-3) 061213	BL-SO40(0-3) 061213	BL-SO40(0-3) 061213D	BL-SO41(0-3) 061213	BL-SO42(0-3) 061213	BL-SO43(0-3) 061213
		Sample Date	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013	6/12/2013
pH	NA	S.U.	--	--	--	8	8.1	--	--	--
Redox Potential	NA	mV	--	--	--	502	463	--	--	--
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	0.43 UJ	0.42 UJ	--	--	--
Aluminum	2.3E+05	mg/kg	5480	5860	6070	--	--	5990	4280	4380
Antimony	9.4E+01	mg/kg	1 UJ	1 UJ	1 UJ	--	--	1.1 J	1 UJ	1 UJ
Arsenic	3.9E+01	mg/kg	4.2	4.3	4.6	--	--	5	4.3	5.9
Barium	4.6E+04	mg/kg	24.3	22.3	23.8	--	--	139	64.1	57.7
Beryllium	4.7E+02	mg/kg	0.4 U	0.41 U	0.4 U	--	--	0.4 U	0.41 U	0.4 U
Cadmium	2.1E+02	mg/kg	0.4 U	0.41 U	0.4 U	--	--	1.9	0.76	0.62
Calcium	NA	mg/kg	37900 J	34800 J	33200 J	--	--	6180 J	6570 J	9590 J
Chromium	3.5E+05	mg/kg	10.1 J	10 J	10.6 J	--	--	20 J	10.7 J	10.3 J
Cobalt	7.0E+01	mg/kg	5 U	5.1 U	5 U	--	--	5 U	5.1 U	5 U
Copper	9.4E+03	mg/kg	9.8	9.3	10.2	--	--	52.5	24.9	21.2
Iron	1.6E+05	mg/kg	12000	11900 J	12100	--	--	13000	9890	11200
Lead	4.0E+02	mg/kg	13.5 J	9.1	13.1 J	--	--	181 J	59.8 J	96.3 J
Magnesium	NA	mg/kg	19400 J	17500 J	16800 J	--	--	2070 J	2880 J	4750 J
Manganese	5.5E+03	mg/kg	297	302	302	--	--	298	259	216
Mercury	3.0E+01	mg/kg	0.032 U	0.032 U	0.034 U	--	--	0.12	0.057	0.068
Nickel	4.6E+03	mg/kg	11.4	11.8	11.2	--	--	12.7	8.8	8.7
Potassium	NA	mg/kg	980 J	1040 J	1040 J	--	--	714 J	513 J	566 J
Selenium	1.2E+03	mg/kg	1 U	1 U	1 U	--	--	1 U	1 U	1 U
Silver	1.2E+03	mg/kg	0.5 U	0.51 U	0.5 U	--	--	0.5 U	0.51 U	0.5 U
Sodium	NA	mg/kg	500 U	510 U	500 U	--	--	500 U	510 U	500 U
Thallium	2.3E+00	mg/kg	1 U	1 U	1 U	--	--	1 U	1 U	1 U
Vanadium	1.2E+03	mg/kg	12.8	12.7	13.6	--	--	15.9	12.4	12.1
Zinc	7.0E+04	mg/kg	35 J	31.2 J	34.7 J	--	--	191 J	80.8 J	78.5 J

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name	Residential RML (HQ=3)	Location	Southwest Playground (Continued)								
			BL-SO44	BL-SO76	BL-SO77	BL-SO78	BL-SO79	BL-SO80	BL-SO81	BL-SO81	BL-SO82
		Field Sample ID	BL-SO44(0-3) ID 061213	BL-SO76(0-3) ID 061113	BL-SO77(0-3) ID 061113	BL-SO78(0-3) ID 061113	BL-SO79(0-3) ID 061113	BL-SO80(0-3) ID 061113	BL-SO81(0-3) ID 061113	BL-SO81(0-3) ID 061113D	BL-SO82(0-3) ID 061113
		Sample Date	6/12/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013
pH	NA	S.U.	--	--	--	--	--	--	--	--	7.9
Redox Potential	NA	mV	--	--	--	--	--	--	--	--	515
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	--	--	--	--	--	0.43 UJ
Aluminum	2.3E+05	mg/kg	4920	4810	4130	292	2730	2550	3570	3790	--
Antimony	9.4E+01	mg/kg	0.99 UJ	0.97 UJ	1 UJ	1 UJ	0.94 UJ	0.98 UJ	1 UJ	1 UJ	--
Arsenic	3.9E+01	mg/kg	4.6	5.1	5.6	1 U	3.6	3.2	29.6	13.8	--
Barium	4.6E+04	mg/kg	66.6	28.3	27.1	26.9	19.3	18.9	32.9	33.1	--
Beryllium	4.7E+02	mg/kg	0.4 U	0.39 U	0.4 U	0.41 U	0.37 U	0.39 U	0.41 U	0.41 U	--
Cadmium	2.1E+02	mg/kg	0.48	0.39 U	0.4 U	0.41 U	0.37 U	0.39 U	3.5	2.3	--
Calcium	NA	mg/kg	2930 J	12000 J	27600 J	2440 J	126000 J	68500 J	31900 J	34000 J	--
Chromium	3.5E+05	mg/kg	10.6 J	8.6 J	11.2 J	1.2 J	5.9 J	5.6 J	34.9 J	17.4 J	--
Cobalt	7.0E+01	mg/kg	5 U	4.8 U	5 U	5.1 U	4.7 U	4.9 U	5.1 U	5.1 U	--
Copper	9.4E+03	mg/kg	20.8	9.2	9.8	3	6.2	6.7	30.1	26.1	--
Iron	1.6E+05	mg/kg	10200	10000	9550	664	13300	6390	14300	12200	--
Lead	4.0E+02	mg/kg	49.7 J	15.4 J	28.8 J	3.2 J	13.8 J	15.9 J	26.8 J	28.7 J	--
Magnesium	NA	mg/kg	1260 J	5360 J	6760 J	573 J	4940 J	24300 J	16800 J	17800 J	--
Manganese	5.5E+03	mg/kg	200	305	302	80.2	300	239	444	422	--
Mercury	3.0E+01	mg/kg	0.059	0.042	0.058	0.045 U	0.053	0.052	0.047	0.053	--
Nickel	4.6E+03	mg/kg	8.7	8.2	7.8	4.1 U	5.3	5.7	11.4	11	--
Potassium	NA	mg/kg	579 J	515 J	500 UJ	510 UJ	569 J	490 UJ	661 J	707 J	--
Selenium	1.2E+03	mg/kg	0.99 U	0.97 U	1 U	1 U	0.94 U	0.98 U	1 U	1 U	--
Silver	1.2E+03	mg/kg	0.5 U	0.48 U	0.5 U	0.51 U	0.47 U	0.49 U	0.51 U	0.51 U	--
Sodium	NA	mg/kg	500 U	480 U	500 U	510 U	470 U	490 U	510 U	510 U	--
Thallium	2.3E+00	mg/kg	0.99 U	0.97 U	1 U	1 U	0.94 U	0.98 U	1 U	1 U	--
Vanadium	1.2E+03	mg/kg	13.2	12	10.8	1 U	7.8	7.2	12.1	12.8	--
Zinc	7.0E+04	mg/kg	125 J	51.5 J	49.8 J	18.8 J	41.3 J	38.9 J	77.2 J	75.1 J	--

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name	Residential RML (HQ=3)	Location	Parking Lot Playground							Beck's Lake	
			BL-SO70	BL-SO70	BL-SO71	BL-SO72	BL-SO73	BL-SO74	BL-SO75	BL-SO91	BL-SO92
		Field Sample	BL-SO70(0-3) ID 061113	BL-SO70(0-3) ID 061113D	BL-SO71(0-3) ID 061113	BL-SO72(0-3) ID 061113	BL-SO73(0-3) ID 061113	BL-SO74(0-3) ID 061113	BLSO75(0-3)- BL-SO91(0-3) 061113	BL-SO91(0-3) 061113	BLSO92(0-3)- 061113
		Sample Date	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013
pH	NA	S.U.	--	--	--	--	--	--	6.8	--	7.9
Redox Potential	NA	mV	--	--	--	--	--	--	519	--	470
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	--	--	--	5 J	--	0.45 UJ
Aluminum	2.3E+05	mg/kg	1080 J	629 J	1890	1330	1730	1230	--	3040	--
Antimony	9.4E+01	mg/kg	0.98 UJ	1 UJ	1 UJ	0.82 UJ	1 UJ	0.98 UJ	--	0.99 UJ	--
Arsenic	3.9E+01	mg/kg	1.4	1 U	3.9	1.6	3.8	1.2	--	8.1	--
Barium	4.6E+04	mg/kg	39.5	36.8	37	34.9	45	38.8	--	51.8	--
Beryllium	4.7E+02	mg/kg	0.39 U	0.42 U	0.42 U	0.33 U	0.4 U	0.39 U	--	0.4 U	--
Cadmium	2.1E+02	mg/kg	0.46	0.42 U	0.72	1.1	0.71	1.4	--	0.52	--
Calcium	NA	mg/kg	7260 J	6840 J	116000 J	6610 J	8510 J	6240 J	--	34400 J	--
Chromium	3.5E+05	mg/kg	2.9 J	1.8 J	4.6 J	3.7 J	6.3 J	4 J	--	6.6	--
Cobalt	7.0E+01	mg/kg	4.9 U	5.2 U	5.2 U	4.1 U	5 U	4.9 U	--	5 U	--
Copper	9.4E+03	mg/kg	8.5 J	4.9 J	14.5	7.6	17.3	9	--	14.9	--
Iron	1.6E+05	mg/kg	1980 J	1050 J	5800	2650	3040	2210	--	8640 J	--
Lead	4.0E+02	mg/kg	8.4 J	4.7 J	11.5 J	10.5 J	13.9 J	8.2 J	--	49.8	--
Magnesium	NA	mg/kg	1180 J	798 J	66200 J	1220 J	1350 J	1080 J	--	5050	--
Manganese	5.5E+03	mg/kg	159	143	200	135	196	120	--	263	--
Mercury	3.0E+01	mg/kg	0.048 U	0.057 U	0.051 U	0.045	0.059	0.061	--	0.072	--
Nickel	4.6E+03	mg/kg	3.9 U	4.2 U	6	3.3 U	4 U	3.9 U	--	7.1	--
Potassium	NA	mg/kg	490 UJ	520 UJ	621 J	410 UJ	500 UJ	490 UJ	--	500 UJ	--
Selenium	1.2E+03	mg/kg	0.98 U	1 U	1 U	0.82 U	1 U	0.98 U	--	0.99 U	--
Silver	1.2E+03	mg/kg	0.49 U	0.52 U	0.52 U	0.41 U	0.5 U	0.49 U	--	0.5 U	--
Sodium	NA	mg/kg	490 U	520 U	520 U	410 U	500 U	490 U	--	500 U	--
Thallium	2.3E+00	mg/kg	0.98 U	1 U	1 U	0.82 U	1 U	0.98 U	--	0.99 U	--
Vanadium	1.2E+03	mg/kg	2.7	1.9	5.7	3.4	4.4	3.2	--	10.6	--
Zinc	7.0E+04	mg/kg	34.3 J	18.5 J	45 J	33.8 J	38.3 J	29.9 J	--	67.2 J	--

Table 2
Soil Sampling Analytical Results
Beck's Lake Health Risk SA
South Bend, St. Joseph County, Indiana

Chemical Name	Residential RML (HQ=3)	Location Location ID Field Sample ID	Southeast Playground				Northwest Playground			
			BL-SO83	BL-SO84	BL-SO85	BL-SO86	BL-SO87	BL-SO88	BL-SO89	BL-SO90
			BL-SO83(0-3) 061113	BL-SO84(0-3) 061113	BL-SO85(0-3) 061113	BLSO86(0-3)- 061113	BL-SO87(0-3)- 061113	BL-SO88(0-3) 061113	BL-SO89(0-3) 061113	BLSO90(0-3)- 061113
			Sample Date	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013	6/11/2013
pH	NA	S.U.	--	--	--	8	--	--	--	8
Redox Potential	NA	mV	--	--	--	514	--	--	--	511
Chromium, Hexavalent	2.9E+01	mg/kg	--	--	--	1.4 J	--	--	--	0.43 UJ
Aluminum	2.3E+05	mg/kg	3580	5270	4480	--	4800	4250	3550	--
Antimony	9.4E+01	mg/kg	0.93 UJ	0.94 UJ	0.9 UJ	--	0.93 UJ	1 UJ	1 J	--
Arsenic	3.9E+01	mg/kg	6.2	4.9	5.8	--	4.6	5.9	9.4	--
Barium	4.6E+04	mg/kg	28.2	35.9	27.3	--	25.7	31.5	84.1	--
Beryllium	4.7E+02	mg/kg	0.37 U	0.38 U	0.36 U	--	0.37 U	0.4 U	0.4 U	--
Cadmium	2.1E+02	mg/kg	0.37 U	0.38 U	0.36 U	--	0.37 U	0.4 U	1.9	--
Calcium	NA	mg/kg	36900 J	14800 J	16400 J	--	25600 J	27800 J	30300 J	--
Chromium	3.5E+05	mg/kg	9 J	7.8 J	6.6 J	--	13.6 J	10.1	46.2	--
Cobalt	7.0E+01	mg/kg	4.6 U	4.7 U	4.5 U	--	4.7 U	5 U	5 U	--
Copper	9.4E+03	mg/kg	15	8.2	9.9	--	8.6	12.5	52.3	--
Iron	1.6E+05	mg/kg	11300	8300	10600	--	10900	10200 J	11700 J	--
Lead	4.0E+02	mg/kg	23.9 J	11.9 J	11.6 J	--	19.5 J	25.1	75.9	--
Magnesium	NA	mg/kg	14200 J	8450 J	7750 J	--	10600 J	8270	6610	--
Manganese	5.5E+03	mg/kg	481	287	339	--	298	395	230	--
Mercury	3.0E+01	mg/kg	0.04	0.033 U	0.037	--	0.049	0.052	0.19	--
Nickel	4.6E+03	mg/kg	8.1	7.3	8.1	--	9.4	8.9	15.5	--
Potassium	NA	mg/kg	590 J	515 J	494 J	--	470 UJ	602 J	541 J	--
Selenium	1.2E+03	mg/kg	0.93 U	0.94 U	0.9 U	--	0.93 U	1 U	1 U	--
Silver	1.2E+03	mg/kg	0.46 U	0.47 U	0.45 U	--	0.47 U	0.5 U	0.5 U	--
Sodium	NA	mg/kg	460 U	470 U	450 U	--	470 U	500 U	500 U	--
Thallium	2.3E+00	mg/kg	0.93 U	0.94 U	0.9 U	--	0.93 U	1 U	1 U	--
Vanadium	1.2E+03	mg/kg	10.7	11.2	11.7	--	14	15.3	11.3	--
Zinc	7.0E+04	mg/kg	106 J	40.2 J	56.3 J	--	54.4 J	81.3 J	117 J	--

Notes:

-- = Not analyzed

HQ = Hazard Quotient

J = Concentration estimated

mg/kg = milligram per kilogram

mV = millivolt

NA = Not available

RML = Removal Management Level

S.U. = Standard Unit

U = Constituent not detected; Reporting limit is presented